

### **REMARKS**

The Official Action dated April 30, 2004 has been carefully considered. Claims 1-12, 24 and 25, are currently pending in the application. Accordingly, the arguments and remarks presented herein are believed sufficient to overcome the rejections of the Examiner and place the present application in condition for allowance. Reconsideration is respectfully requested.

#### **35 U.S.C. § 112**

Applicants note the Examiner's statement that claim 6 is not indefinite, and appreciate the accompanying withdrawal of the previous rejection of claim 6 under 35 U.S.C. § 112, second paragraph.

#### **35 U.S.C. § 102**

Claims 1-7, 9-12, 24 and 25 were again rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,989,696 to McCarthy et al. ("McCarthy"). Specifically, the Examiner asserts that Example 8 of the reference discloses a film comprising fluorohectorite on a polymeric substrate in "an amount of 0.3 lb per 13000 ft<sup>2</sup>." The Examiner asserts that this is equivalent to a coating weight of 11.25 micrograms/cm<sup>2</sup>. On page 2 of the Office Action, the Examiner noted that the deposited film of example 8 "is dried and not disclosed as having a residual water content." However, the Examiner also notes that McCarthy teaches that the fluorohectite of Example 8 "comprises only 16.2% of the coating composition, concluding therefore that the fluorohectite particles are only present in an amount of 1.8 mcg/cm<sup>2</sup> (16.2% of 11.25). The Examiner thereby concludes that Example 8 anticipates instant claim 1. However, as further detailed below, Applicants respectfully submit that the Examiner is mistaken in attempting to equilibrate the composition percentages of a coating formulation with an applied dried coating weight. This rejection is traversed and reconsideration is respectfully requested.

Present independent claim 1 is directed to a surface coating film for at least partially covering a surface. The coating film comprises a plurality of nonphotoactive nanoparticles which are present in an amount less than  $3 \mu\text{g}/\text{cm}^2$  of the area of the surface. Note that claim 1 defines the inventive coating by its nanoparticle weight, independent of other coating constituents. Also, Applicants direct the Examiner's attention to the specification at page 33, lines 17-19 wherein this embodiment is discussed. Note that this passage unambiguously designates that the instantly recited coating weight is based on the dry coating.

Applicants note that McCarthy teaches application of hectorites as aqueous dispersions or mixtures containing about 3 to 18 % hectorite, and that the coating is then dried by conventional means (col. 4, lines 2-6). In fact, specifically with respect to example 8, McCarthy teaches that the “*aqueous* coating contained 16.2 % Laponite...,” (emphasis added) which “yield coating weights between 0.3 and 0.6 lbs /13,000 ft.<sup>2</sup> ream.” Clearly, the “16.2%” composition refers to the percentage of hectorite comprising the coating composition prior to application and drying, and it “yields” a coating, clearly referring to the dried hectorite coating, comprising the reported coating weight range of “between 0.3 and 0.6 lbs/13,000 ft<sup>2</sup>”.

McCarthy teaches the presence of 3.8% binder in the coating compositions yielding the dry coating weight of  $11.25 \mu\text{g}/\text{cm}^2$ . This represents  $(3.8)/(3.8 + 16.2) \times 100 = 19\%$  of the dry weight. The hectorite coating is the only other disclosed component and therefore constitutes the remaining 81% of the coating. Hence, the hectorite coating weight of example 8 is  $(11.25) \times 0.81 = 9.1 \mu\text{g}/\text{cm}^2$ , more than 3 times as great as the upper limit of less than  $3 \mu\text{g}/\text{cm}^2$  required by instant claim 1.

In the absence of any presumptions with respect to the vehicles employed, it is clear that the coating weight disclosed by McCarthy in Example 8 is much larger than the “less

than  $3 \mu\text{g}/\text{cm}^2$ " recited in instant claim 1. In fact, McCarthy teaches higher coating weights in other reference examples, even teaching away from the presently recited coating weight range in Example 3 by noting that "coating weights above 0.7 lbs/sq.ft. ream perform well in electrographic printing" (column 16, lines 25-26). In the coating arts, 1 ream = 3,000 sq.ft. Thus, 0.7/sq.ft. ream is equivalent to  $114 \mu\text{g}/\text{cm}^2$ , and far greater than the upper limit of claim 1. In fact, McCarthy fails to teach, disclose or suggest any values for coating weight within or close to the instantly recited coating weight range. Moreover, the present inventive specification teaches the inventive significance of this range, stating that "coat weights of less than  $3 \mu\text{g}/\text{cm}^2$  have been found to produce residue-free coatings on high gloss surfaces, such as painted vehicle surfaces" (see page 15, lines 15-17).

With respect to claim 24, the Examiner asserts that the films of McCarthy are dried and not disclosed as having any water content, and therefore comprise less than the 4% water as recited in instant claim 24. The Examiner further asserts that the term "dried" is not specifically defined in the context of the McCarthy reference and that its plain meaning should be inferred as the intended meaning. The Examiner rejected Applicants submitted reference in support of an alternative "industry-standard" meaning for "dry or dried or drying" in the coating arts, stating that the reference, which derived from the Paint industry, is inapposite because the coating is not a paint.

Instant independent claim 24 is directed to a surface coating film for at least partially covering a surface. The coating film comprises a plurality of nonphotoactive nanoparticles and water, with the film having a water content of less than or equal to about 4%. The instant specification teaches that reducing the water content of hard surface coating compositions can greatly increase the durability of the coating (page 35, lines 6-11). Applicants point out that the discussion in the specification at page 35 makes it clear that "dry" and "drying," in the

film and coating arts are not absolute conditions, are understood as existing in degrees, and that a film can be "dry" within the limits of human empirical experience, but still contain bound water.

Further, with regard to instant independent claim 24, Applicants respectfully submit that the Examiner's assertions that because the reference teaches a drying step and does not specifically disclose the existence of residual water upon completion of the drying step, the reference therefore teaches completely dehydrated compositions, is misguided. The Examiner asserts that the terms "dried" and "dry" must be given the "plain" meaning of "having no moisture and that any alleged deviation from the "plain" meaning of those terms must be supported by the reference itself. However, Applicants note that the patentability standard is the meaning understood by persons of ordinary skill in the art, not the plain generic meaning as understood by lay persons.

McCarthy's precise language is that "the coating is dried by conventional means such as in a drying oven..." Applicants respectfully submit first that the Examiner is incorrect in the assumption that the "plain" meaning of the term "dried" in the coating arts means "having no moisture," or that McCarthy even necessarily teaches drying to a state of being absolutely "dry." The term "dried" is often used in the coating arts similarly to the term "cured," and does not necessarily refer to a state of dehydration or complete removal of solvent. As an example of the imprecision of the meaning of the word "dry," as well as its interchangeable usage with "cure" and the subtleties of usage typical in the coating arts, Applicants submit the electronic glossary of Covenma, a company well-known in the coating industry, enclosed herein. Applicants point specifically to page 6 of the reference glossary wherein "dry time" is defined as "the time allotted for an applied coating film to reach a set stage of cure or hardness." Note that there is a conspicuous absence of any relation to an absolute *or* relative

degree of solvent removal or dehydration. In addition, Applicants point out the various states of "dry" also defined on page 6 are based on human tactile response and perception rather than level of moisture or chemical quantification of any kind (see, e.g. "dry to handle," "dry to touch", "dry to tack free").

Moreover, Applicants point out that clays, and hectorite clays such as those included as ingredients in both McCarthy and the present inventive coatings are hydrophilic. Indeed, the hectorite coatings of McCarthy are applied as aqueous dispersions or mixtures (see, e.g. column 6, line 67), and are admixed with a 20% aqueous solution of starch prior to application (see, e.g., Example 1 in column 10). While McCarthy does report some coatings as percent solids, none of these correspond to coating compositions comprising a water content of less than 4%. Applicants find no disclosure in McCarthy of coatings having a water content of less than or equal to about 4% and, as demonstrated above, this limitation is not inherent in the "drying" teachings of McCarthy, as "drying" in the coating arts does not imply any particular level of solvent removal or dehydration.

Anticipation under 35 U.S.C. § 102(b) requires the disclosure in a single prior art reference of each element of the claims under consideration, *Alco Standard Corp. v. TVA*, 1 U.S.P.Q.2d 1337, 1341 (Fed. Cir. 1986). McCarthy fails to teach surface coating films comprising nonphotactive nanoparticles present in an amount less than  $3 \mu\text{g}/\text{cm}^2$  of the area of the surface. Moreover, McCarthy fails to teach surface coatings for at least partially covering a surface comprising a plurality of nanoparticles and water, with the film having a water content less than 4%. Hence, independent claim 1, and claims 2-12 dependent therefrom, and independent claim 24, and claim 25 dependent therefrom, are not anticipated by McCarthy and the rejection under 35 U.S.C. § 102(b) is overcome. Reconsideration is respectfully requested.

**35 U.S.C. § 103**

Claim 8 was rejected under 35 U.S.C. § 103(a) as being obvious and unpatentable over McCarthy, as applied in the prior rejection, in view of the American Heritage Dictionary entry for "wetting agent." Specifically, the Examiner asserts that the addition of a wetting agent to a film forming composition like that of the prior art would have been obvious to one of ordinary skill in the art because the definition of "wetting agent" teaches that it will cause a liquid to spread across and penetrate a surface more easily. This rejection is traversed and reconsideration is respectfully requested.

Claim 8 recites the film of claim 1 consisting essentially of nanoparticles, a wetting agent, and water. Since claim 8 depends from claim 1, the film of claim 8 comprises the limitations recited in claim 1 as well as the additional limitations recited in claim 8. McCarthy does not disclose, teach or suggest the surface coating film of claim 1. There is no disclosure, either in text or via example, of film coatings having coating weights in the instantly recited range. Moreover, the McCarthy nanoparticle coatings are never located at the surface of the substrate, rather, McCarthy teaches that it is "advantageous to minimize the exposure of the hectorite coating," and that the hectorite coating is always "buried" (column 8, lines 35-44). Hence, there is not only no teaching or suggestion in McCarthy of the instantly recited coating weight ranges, there is no motivation relevant to the laminate utility taught by McCarthy to provide coating weights within that range - presently taught as superior for high-gloss surfaces. The secondary reference, the American Heritage Dictionary, fails to address or overcome the deficiencies of the primary reference, McCarthy.

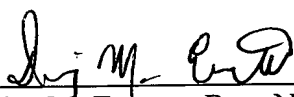
To establish *prima facie* obviousness of the claimed invention, all the claim limitations must be taught or suggested by the prior art, *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Since the combination of McCarthy and the American Heritage

Dictionary fails to disclose, teach or suggest all the limitations of instant independent claim 1, and the requisite motivation to modify the teachings of McCarthy to result in the claimed invention is missing, independent claim 1 is nonobvious over McCarthy and the American Heritage Dictionary. Dependent claims are nonobvious under §103 if the independent claims from which they depend are nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ 2d 1596 (Fed. Cir. 1988). Hence, dependent claim 8 is nonobvious over the combination of McCarthy in view of the American Heritage Dictionary, and the rejection has been overcome. Reconsideration is respectfully requested.

It is believed that the above represents a complete response to the Office Action dated April 30, 2004, and to the rejections of claims 1-12, 24 and 25 under 35 U.S.C. §§ 102(b) and 103(a). Reconsideration and an early allowance are respectfully requested.

Respectfully submitted,

By: \_\_\_\_\_

  
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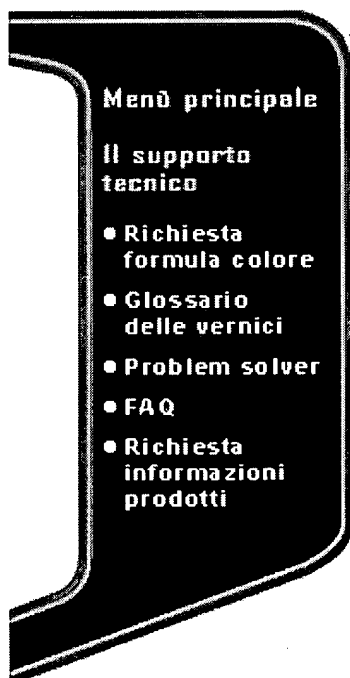
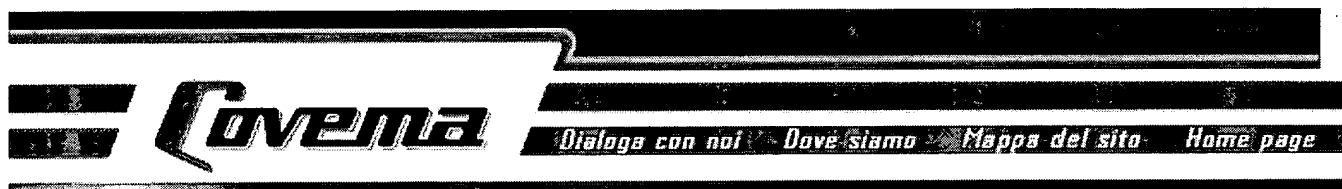
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**Beta**

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## Glossario delle vernici

Select the first letter of the word from the list to jump to appropriate section of the glossary.

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Z](#)

**Abrasion Resistance** The ability of a coating to resist degradation due to mechanical wea

**Abrasive Media** The material used in abrasive blasting to remove surface contaminants. Examples of abrasive media are sand, iron shot, crushed iron slag, glass beads or ground shells.

**Accelerated Weathering** A test designed to simulate but at the same time intensify and accelerate the destructive action of natural outdoor weathering.

**Accelerator** A substance used in small proportions to increase the speed of a chemical re: Accelerators are often used in the paint industry to hasten the curing of a coating system.

**Acrylic Latex** An aqueous dispersion of acrylic resins.

**Acrylic Resin** A clear resin attained by polymerizing various acrylic monomers either alone combination.

**Activato** The curing agent of a two component coating system.

**Adhesion** The degree of attachment between a paint film and the underlying material to w in contact (substrate).

**Adsorption** Process of attraction or attachment to a surface. The retention of foreign mole on the surface of a substance.

**Air Cap (Air Nozzle)** Perforated housing for directing the atomizing air at the head of a air gun.

**Air Drying** The most common form of curing a coating in which drying takes place by oxid: solvent evaporation by simple exposure to air without heat or catalyst.

**Air Entrapment** The inclusion of air bubbles in liquid paint or a paint film.



**Airless Spray** A spraying system in which paint is atomized using high hydraulic pressure than compressed air.

**Alcohol** A group of solvents of relatively high evaporation rate but with fairly low solvent strength. Methanol, ethanol and isopropyl are common alcohols.

**Aliphatic Hydrocarbons** A class of organic solvents which are composed of open chains of carbon atoms. Aliphatics are relatively weak solvents. Mineral spirits and VM & P Naphtha aliphatic solvents.

**Alkali** An aqueous liquid which has a pH value of between 7 and 14. A base or caustic material.

**Alkyd Resin** Resins prepared by reacting alcohols and fatty acids. Widely used in general purpose coatings.

**Alligatoring** Surface imperfections of a coating film having the wrinkled appearance of alligator skin.

**Ambient Temperature** Room temperature or the existing temperature of the surroundings.

**Amine** Materials often used as curing agents for epoxy coatings.

**Anchor Pattern** The surface profile generated by abrasive blasting or some power tool cleaning. The distance between peaks and valleys of the blast profile.

**Anode** The positive terminal of an electrical source. In a corrosion cell, the anode is the electrode that has the greater tendency to go into solution of the point at which corrosion occurs.

**Aromatic Hydrocarbons** A class of relatively strong organic solvents which contain an unsaturated ring of carbon atoms. Examples are benzene, toluene and xylene.

**Asphalt** A black resinous material of petroleum origin.

**ASTM B 117 Salt Fog Spray** - Atomized 5% sodium chloride solution at 95 F.

**ASTM D 4258 - 83** Standard practice for surface cleaning concrete for coating. This practice includes surface cleaning of concrete to remove grease, dirt, and loose material prior to the application of coatings. Procedures include broom cleaning, vacuum cleaning, air blast cleaning, water cleaning, detergent water cleaning, and steam cleaning.

**ASTM D 4259 - 83** Standard practice for abrading concrete.

1. This practice includes surface preparation of concrete to prepare the surface prior to the application of coatings.
2. This practice is intended to alter the surface profile of the concrete.

**ASTM D 4260 - 83** Standard practice for acid etching concrete.

1. This practice includes surface preparation of concrete to prepare the surface prior to the application of coatings.
2. This practice is intended to alter the surface profile of the concrete.

**ASTM D 4261 - 83** Standard practice for surface cleaning concrete unit masonry for coating. This practice covers surface cleaning of concrete unit masonry to remove dust, dirt, mortar spatter, oil, and grease prior to the application of coatings. Procedures include vacuum cleaning, air-blast cleaning, water cleaning, detergent water wash, steam cleaning, and mechanical cleaning.

2. This practice is NOT intended to alter the surface profile of the concrete masonry units but to clean the surface.

**ASTM D 4262 - 83** Standard test method for pH of chemically cleaned or etched concrete surfaces.

1. This test method covers the procedure for determining the acidity or alkalinity of concrete surfaces prepared by chemical cleaning or etching prior to coatings.

**ASTM D 4263 - 83** Standard test method for indication of moisture in concrete by the plastic method.

1. This test method is used to indicate the presence of capillary moisture in concrete.

A | B | C | D | E | F | G | H | I | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Z

**Barrier Coat** A coating used to isolate a paint system either from the surface to which it is or a previous coating for the purpose of increasing adhesion or insuring compatibility.

**Binder** The nonvolatile portion of the vehicle of a coating which holds together the pigment particles.

**BITUMASTIC®** BITUMASTIC® is a Century + year old trade name that has now become synonymous with long term protection from water penetration. Typically made from coal tar blends of resins, such as epoxy, these products have been used to line water tanks, sewage tanks, coat the interior and exterior of buried pipe and for protection of equipment subjected to water immersion.

**Bituminous Coating** A coal tar or asphalt based coating material usually used in thick film

**Blast Cleaning** The cleaning and roughing of a surface by the use of sand, artificial grit or metal shot which is projected at a surface by compressed air or mechanical means. See S:

**Blast Profile** See anchor pattern. A cross sectional view of an abrasive blasted surface.

**Bleaching** The fading of a color toward white generally caused by exposure to chemicals or ultraviolet radiation.

**Bleeding** The diffusion of color matter through a coating from underlying surfaces causing change.

**Blistering** The formation of blisters in paint films by the local loss of adhesion and lifting of from the underlying substrate.

**Blooming** A haziness which develops on paint surfaces caused by the exudation of a component of the paint film.

**Blushing** A film defect which manifests itself as a milky appearance which is generally caused by rapid solvent evaporation or the presence of excessive moisture during the curing process.

**Bonding** The attachment between a coating film and the underlying material to which it is applied.

**Bounce Back** The rebound of atomized paint, especially when applied by conventional air methods.

**Boxing** Mixing of coatings by pouring from one container to another.

**Bridging** The formation of a paint film over a depression.

**Brittleness** The lack of resistance to cracking or breaking of a paint film when bent or flexed.

**Brushability** The ease of applying a coating by brush.

**Bubbling** A temporary or permanent film defect in which bubbles of air or solvent vapor are present in the applied film.

**Build** The wet or dry thickness of a coating film.

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

**Carbo Zinc®** Trade name for a group of Carboline zinc filled coatings. The Carboline Company is the world leader in developing, producing and selling inorganic zinc's and has, over the last 20 years, protected over 2 billion square feet of steel with our Carbo Zinc 11.

**Carboline®** Manufacturer of high performance Industrial coatings. 350 Hanley Industrial Center, St. Louis, MO 63144-1599 - 314/644-1000

**CARBOMASTIC®** CARBOMASTIC has become known to mean "High performance, in harsh and dirty areas". Carboline's Carbomastic 15 was the original Aluminum Epoxy Mastic. This group of products includes the two component surface tolerant epoxies. They are normally used in situations where abrasive blasting is not an option. However, like any good quality epoxy, they increase the service life of the system as you increase the cleaning level! Carbomastics can be topcoated with most any generic type top coat and will go over just about any aged coating and can also be used as standalone one or two coat systems.

**Catalyst** An accelerator, activator or curing agent which chemically increases the rate of reaction in a coating.

**Cathode** The negative terminal of an electrolytic cell which, in the corrosion process, is protected and not attacked.

**Cathodic Protection** The reduction or prevention of corrosion of a metal surface caused by making it cathodic. This is accomplished by using a sacrificial anode (such as in zinc rich coatings) or by using impressed current.

**Caustic** A strong base or alkaline material.

**Caustic Soda** A common name for sodium hydroxide, a strong base or alkali.

**Cellosolve** Proprietary name for ethylene glycol monoethyl ether. A slow evaporating, water miscible, relatively strong solvent often used in epoxy coatings.

**Cementitious Coatings** A coating containing Portland cement as one of its components held to the surface by a binder.

**Centipoise** One hundredth of a poise which is a unit of measurement for viscosity. Water at room temperature has a viscosity of 1.0 Centipoise.

**Chalking** The formation of a friable powdery coating on the surface of a paint film, generally caused by exposure to ultraviolet radiation resulting in a loss of gloss.

**Checking** Cracks in the surface of a paint film.

**Chipping** Small pieces of paint removed from the surface, typically a sign of physical damage incurred in shipping or handling. Use of a surface tolerant primer for touch up followed by the same finish coat generally solves the problem.

**Chlorinated Hydrocarbon** A class of strong, fast evaporating, nonflammable solvents such as carbon tetrachloride, methylene chloride or trichloroethylene.

**Chlorinated Rubber** A coating resin formed by the reaction of rubber with chlorine gas. Often used for chemical or water resistant properties.

**Clean and Dry** Rather than a method, the requirement for Clean and Dry describes the condition of the surface prior to painting. The surface shall be clean, dry, and free of oil, grease, wax, dirt, and any other contaminant that may effect the adhesion of the coating. For best result

**high performance requirements** remove latencies and contaminants from precast and cast-concrete by abrasive blasting or high pressure water blasting. Dry means that the substrate contains less than 15% moisture. Concrete should be cured at least 28 days and mortar joints at least 15 days @ 75 F and 50% RH. See also: ASTM D 4263 - 83; ASTM D 4258 - 83; ASTM D 4259 - 83; ASTM D 4260 - 83; ASTM D 4261 - 83; ASTM D 4662 - 83

**Cleaners** A detergent, alkali, acid or similar contamination removing material, which is usually water borne.

**Coal Tar** A dark brown to black bituminous material produced by the destructive distillation of coal.

**Coal Tar Epoxy** A coating in which the binder or vehicle is a combination of coal tar and epoxy resins.

**Coalescence** The formation of resinous or polymeric material when water evaporates from an emulsion or a latex system, permitting contact and fusion of adjacent particles; fusing or flowing together of liquid particles

**Coat** The paint applied to a surface in a single application to form a film when dry.

**Coating System** A number of coats separately applied, in a predetermined order, at suitable intervals to allow for drying and curing, resulting in a completed job.

**Cobwebbing** Premature drying of a coating during spraying causing a spider web effect.

**Cohesion** The forces which bind the particles of a paint film together into a continuous film

**Cold Rolled Steel** Low carbon, cold-reduced, sheet steel. Differs from hot rolled steel by the absence of mill scale.

**Color Fast** Nonfading.

**Color Retention** The ability to retain its original color during weathering or chemical exposure.

**Combustible Liquid** Any liquid having a flash point at or above 100 F (37.8 C)

**Compatibility** The ability to mix with or adhere properly to other coatings without detriment

**Conical Mandrel** An instrument used to evaluate a coating's resistance to cracking when bent over a specified radius.

**Copolymer** Large molecules obtained by simultaneous polymerization of different monomers in vinyl copolymers.

**Corrosion** The decay, oxidation or deterioration of a substance (steel, concrete, and other materials) due to interaction with the environment. See also "Rust"

**Cracking** Splitting of a paint film usually as a result of aging.

**Craters** The formation of small bowl shape depressions in paint films.

**Cross Spraying** Spraying the first pass in one direction and the second at a right angle to provide more even film distribution.

**Crosslinking** The setting up of chemical links between molecular chains to form a three dimensional network of connected molecules.

**Curing Agent** A hardener or activator added to a synthetic resin to develop the proper film properties.

**Curtains** Long horizontal runs in a coating film that occur on vertical surfaces when a coat is applied too heavily.

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Z

**Degreaser** A chemical solution or compound designed to remove grease, oils and similar contaminants.

**Deionized Water** Water which has been purified to remove mineral salts.

**Delamination** The separation between layers of coats due to very poor adhesion.

**Density** Mass per unit volume, usually expressed as grams per milliliter or pounds per gallon.

**Descaling** The removal of mill scale or rust from steel by mechanical means, sometimes also by flame cleaning.

**Dew Point** The temperature of a surface, at a given ambient temperature and relative humidity, at which condensation of moisture will occur.

**DFT** Dry film thickness.

**Diluent** A portion of the volatile components of a coating which is not a true solvent and has minimal effect on the viscosity.

**Dispersion** The suspension of tiny particles, usually pigments, in a liquid, usually resin.

**Distilled Water** Water which has been purified by vaporizing the liquid and collecting the vapor, which is then condensed back to a liquid having, in the process, removed the contaminants.

**Drier** A chemical which promotes oxidation and subsequent drying of a paint film. Primarily used in oil base paints.

**Dry Fall** A coating which is designed to dry rapidly so that the overspray can be easily removed from the surfaces below.

**Dry Spray** Overspray or bounce back producing a sandy finish due to the sprayed particles being partially dried before reaching the surface.

**Dry Time** Time allotted for an applied coating film to reach a set stage of cure or hardness.

**Dry to Handle** The degree of cure at which a film will resist deformation due to handling.

**Dry to Recoat** The time required for a cured film to dry prior to the application of a second coat.

**Dry to Tack Free** A stage at which a coating film will form a skin to which dust will not adhere.

**Dry to Touch** The state of dry at which a coating film will not transfer onto an item touched against it.

**Drying Oil** An oil having the property of hardening by oxidation to a tough film when exposed in the form of a thin film.

**Dulling** A loss of gloss or sheen.

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Z

**Effervescence** An effect in the film caused by rapid solvent release. This "boiling" of solvent is usually undesirable.

causes a pinholed or cratered appearance reducing gloss.

**Efflorescence** Water soluble salts, deposited as moisture evaporates, on the exterior of concrete.

**Elastic** The ability of a substance to return to its original shape or volume after a distorting on the substance has been removed.

**Elcometer** A trademark and brand name for a magnetic instrument for measuring dry film thickness of coatings applied to ferrous surfaces such as steel.

**Electrical Potential** A minute voltage produced by the separation of molecules into their ionic state.

**Electrolyte** A substance that dissociates into ions in solution thereby becoming electrically conductive.

**Electromotive Series** A listing of elements arranged according to their standard electrical potentials otherwise known as galvanic series.

**Electrostatic Spray** The spray application of paint where the particles are charged causing to be electrically attracted to the grounded surface.

**Emulsion** A two phase liquid system in which small droplets of one liquid are immiscible in are dispersed uniformly throughout a second continuous liquid phase.

**Enamel** A term used to characterize a coating which has a glossy smooth finish. A common for alkyd coatings.

**Epoxy** A synthetic resin, derived from petroleum products, that can be cured by a catalyst to upgrade other synthetic resins to form a harder, more chemical resistant film.

**Ester** Compounds formed by the reaction of alcohols and organic acids.

**Etching** The treatment of a surface with an acid in order to dissolve loose particles or provide profile.

**External Atomization** Using air to break up a coating material after it has exited the spray nozzle.

**A | B | C | D | E | F | G | H | I | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Z**

**Fading** Loss of gloss or sheen.

**Fan Pattern** The geometry of a spray pattern.

**Feather Edge** Reduced film thickness at the edge of a dry paint film in order to produce a continuous appearance.

**Ferrous** An iron containing metal.

**Filler** A compound used to extend or bulk a coating to provide extra body or hiding power.

**Film** A layer of coating or paint.

**Film Build** The dry film thickness characteristics of a coat.

**Film Integrity** The continuity of a coating free of defects.